Broward Leaders Water Academy

October 3, 2008

Water Supply Options

Speakers:

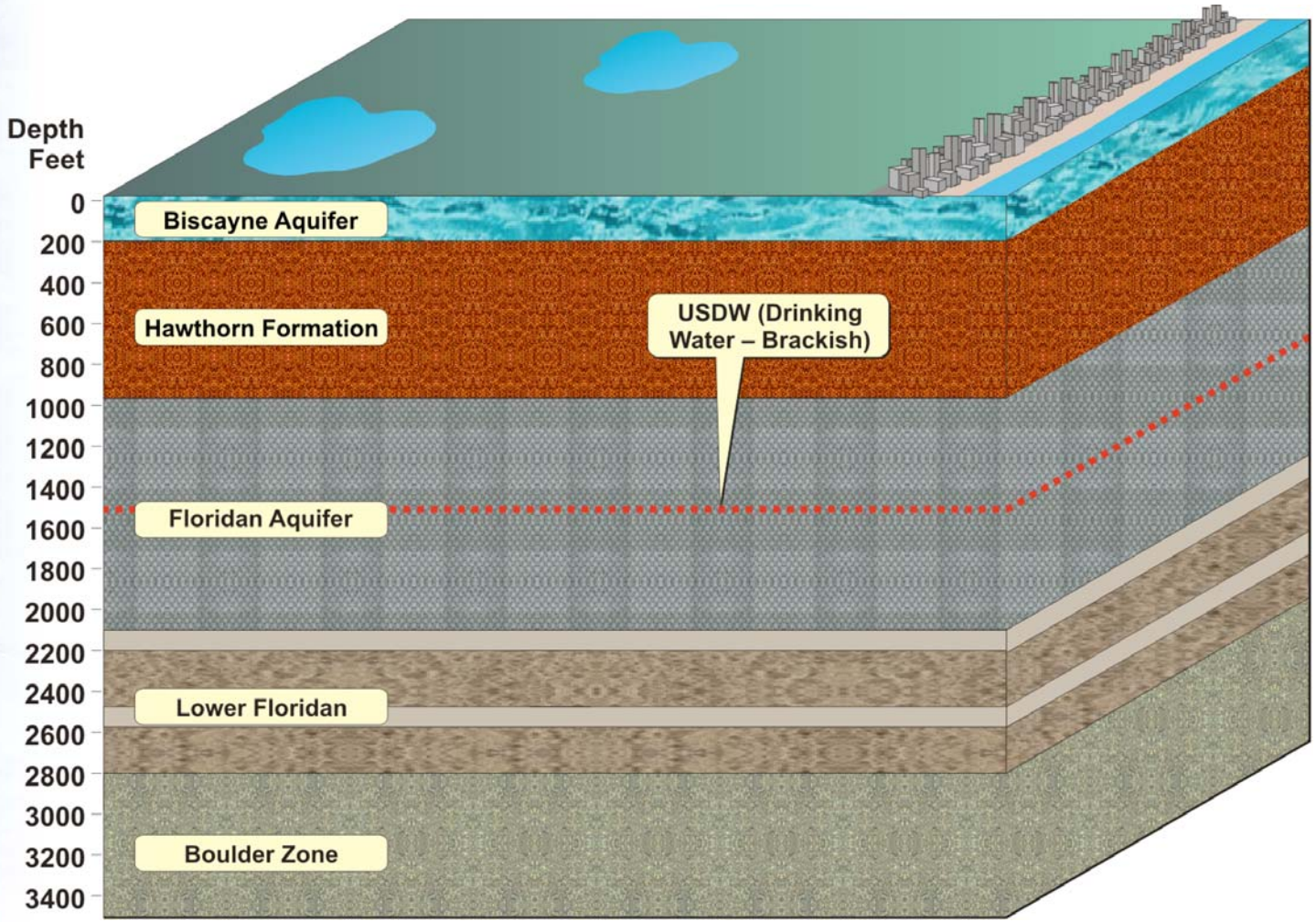
Patrick A. Davis, P.E. Hazen and Sawyer, P.C.	–	*The basics: Current and future options*
Patrick Gleason, P.G. CDM, Inc.	–	*Possible environmental implications of future water policies*
Hank Breitenkam Utilities Director City of Plantation	–	*The water utility: where the rubber hits the road*

The “fundamentals”:

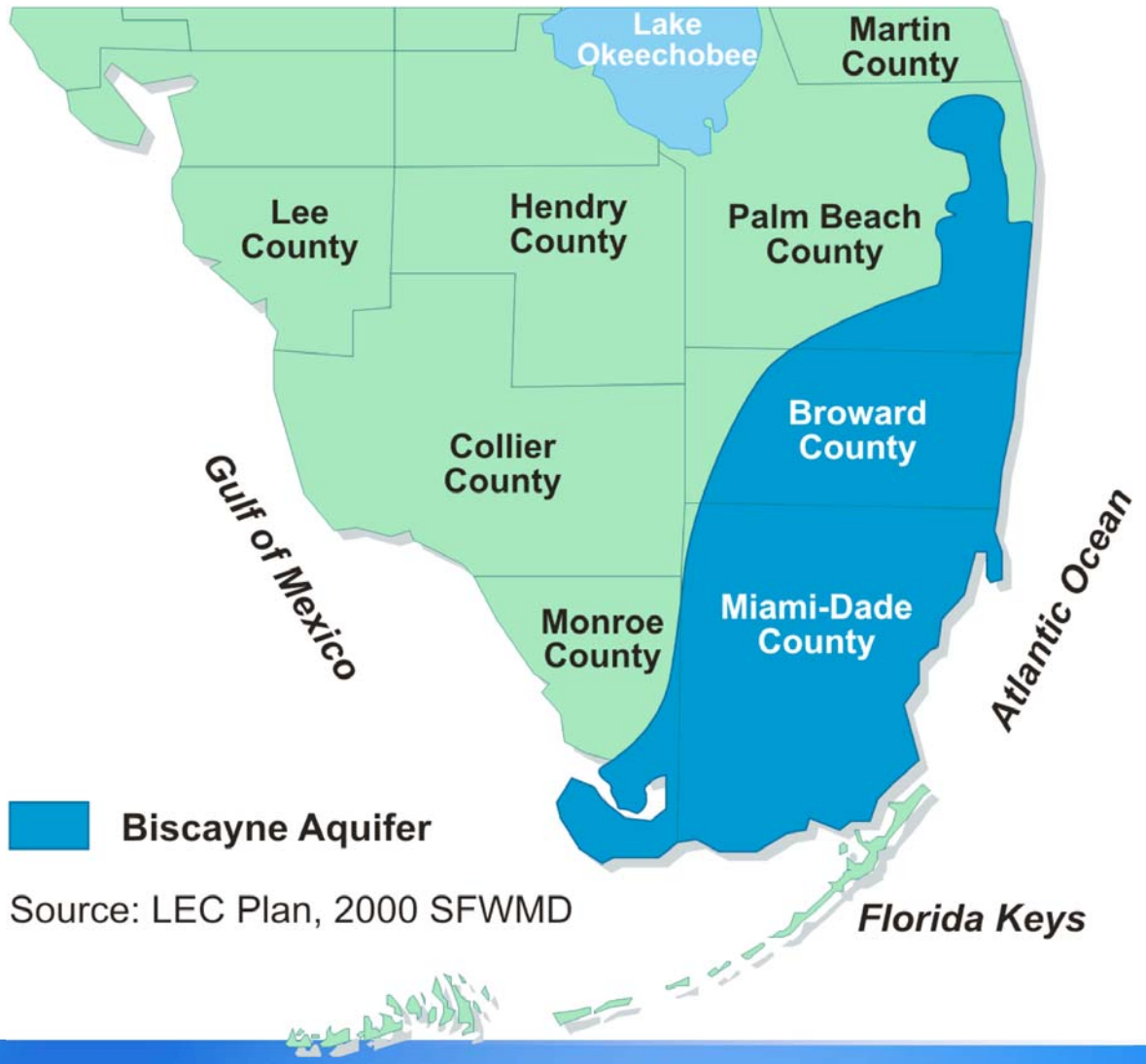
What is our current source of water?

Where might we get additional water in the future?

Geology

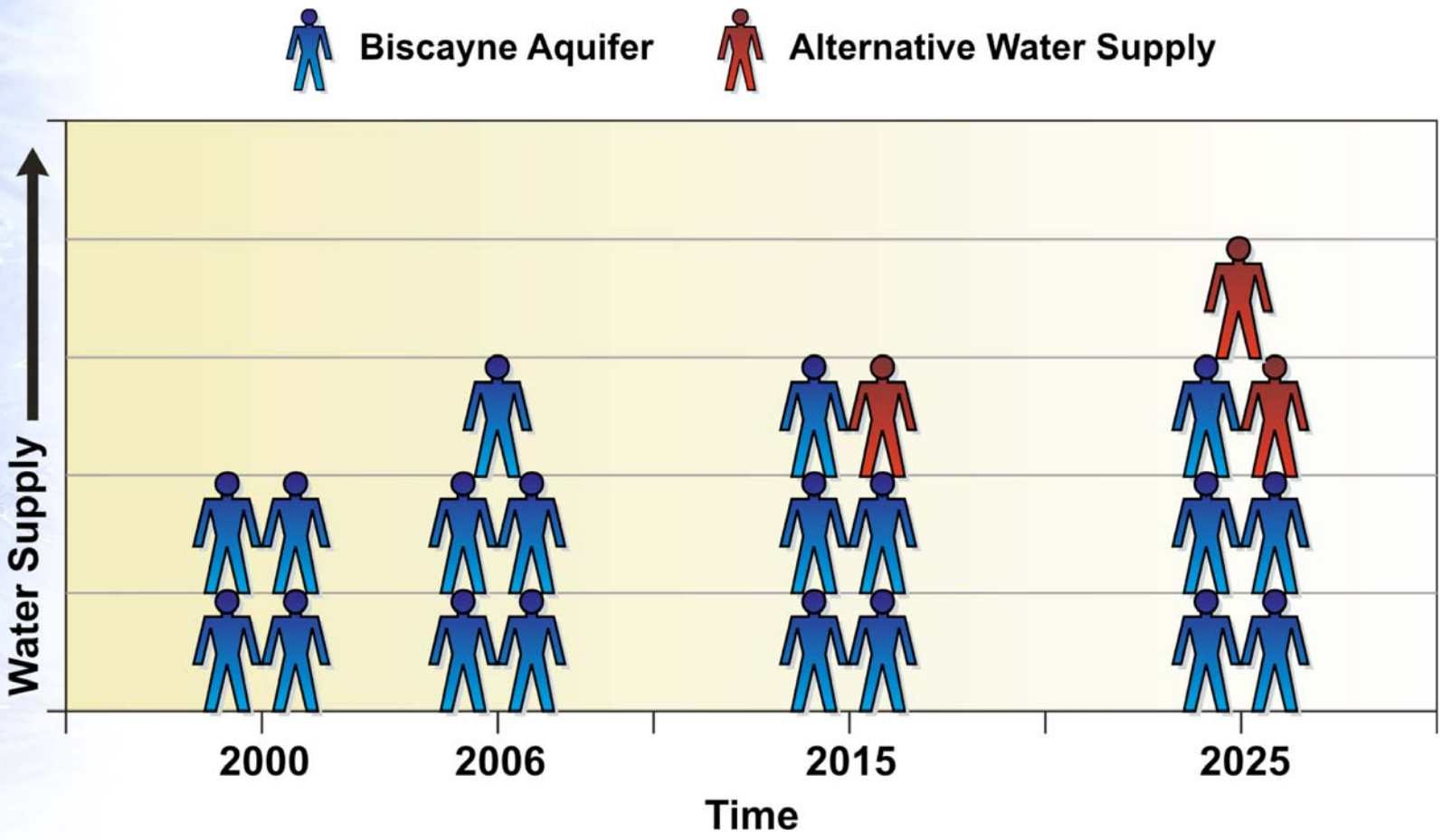

Depth
Feet
0
200
400
600
800
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
3000
3200
3400
Biscayne Aquifer
Hawthorn Formation
USDW (Drinking Water – Brackish)
Floridan Aquifer
Lower Floridan
Boulder Zone

Biscayne Aquifer location

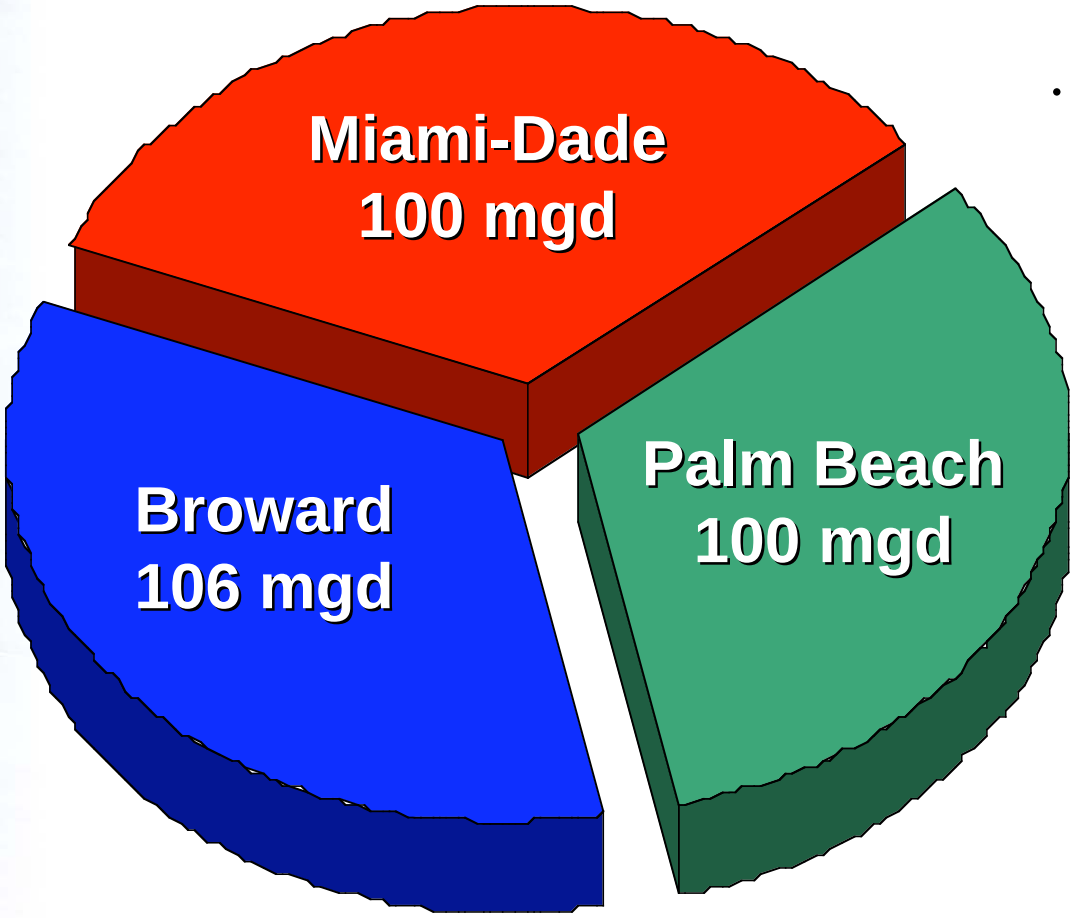


The " Regional Water Availability Rule" caps usage of Biscayne Aquifer

Essentially limits use to 2006 withdrawal

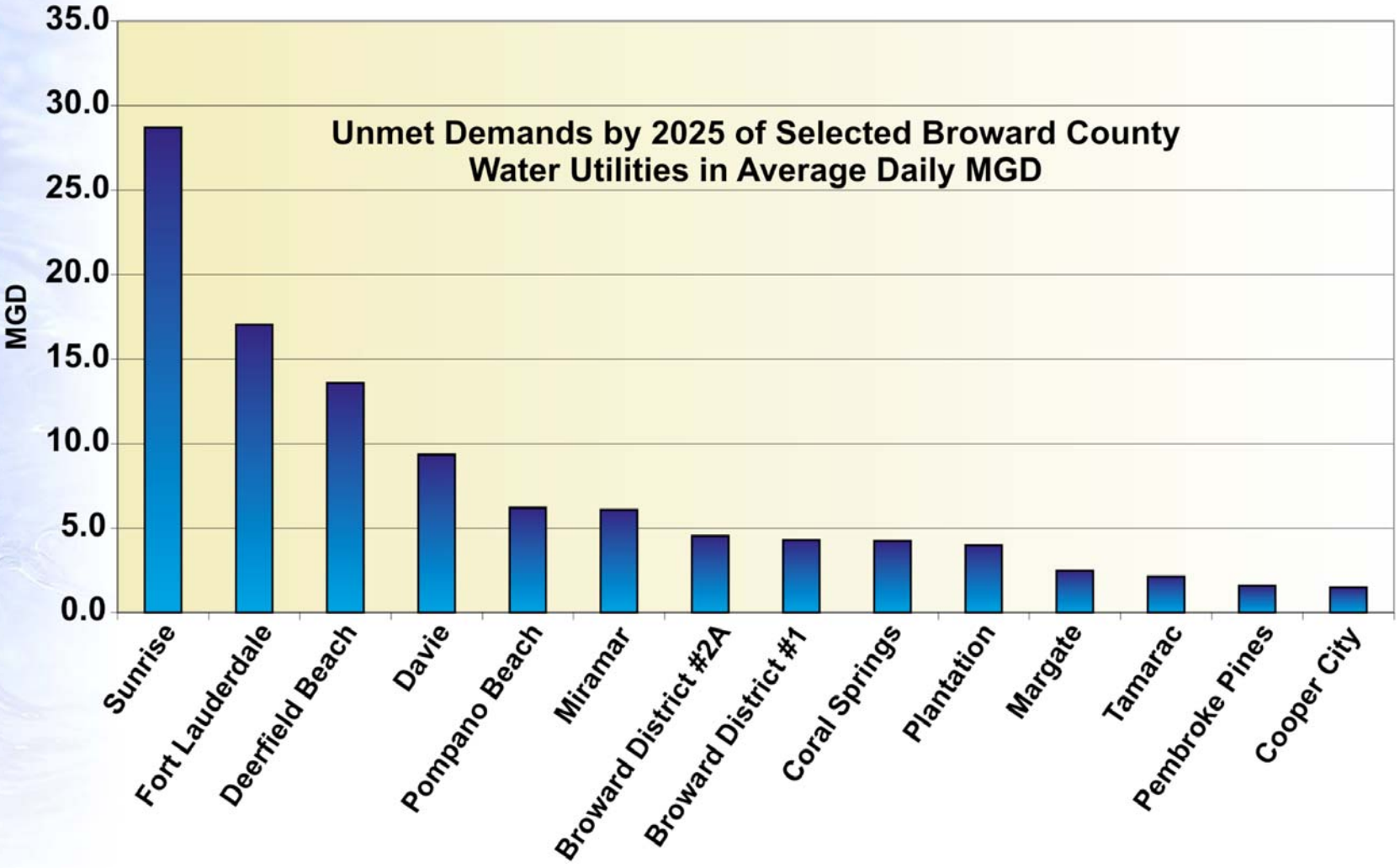


Additional finished water demand through 2025



- 300 mgd in tri-county area

How Broward's need breaks down:

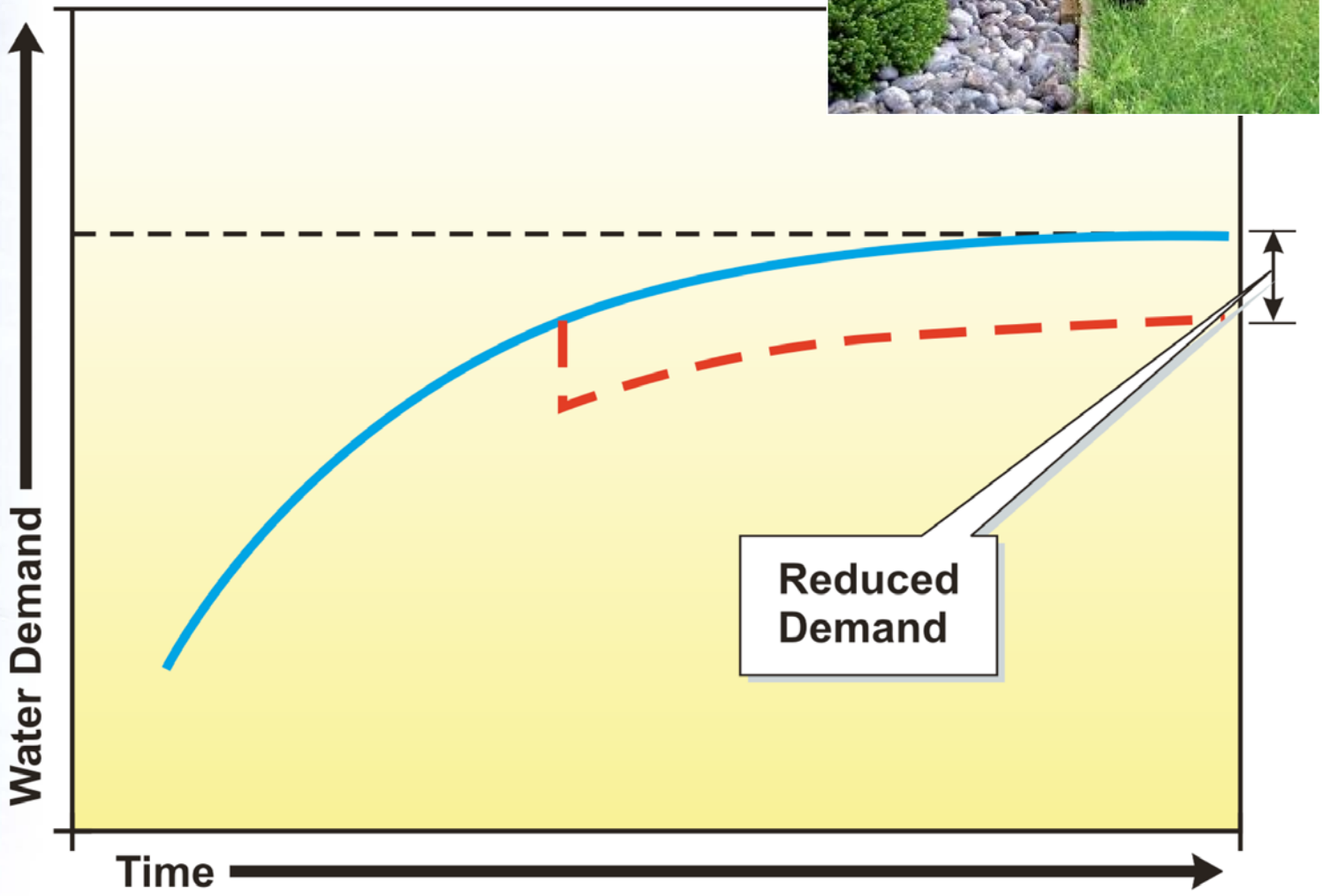


Where might we get additional water in the future?

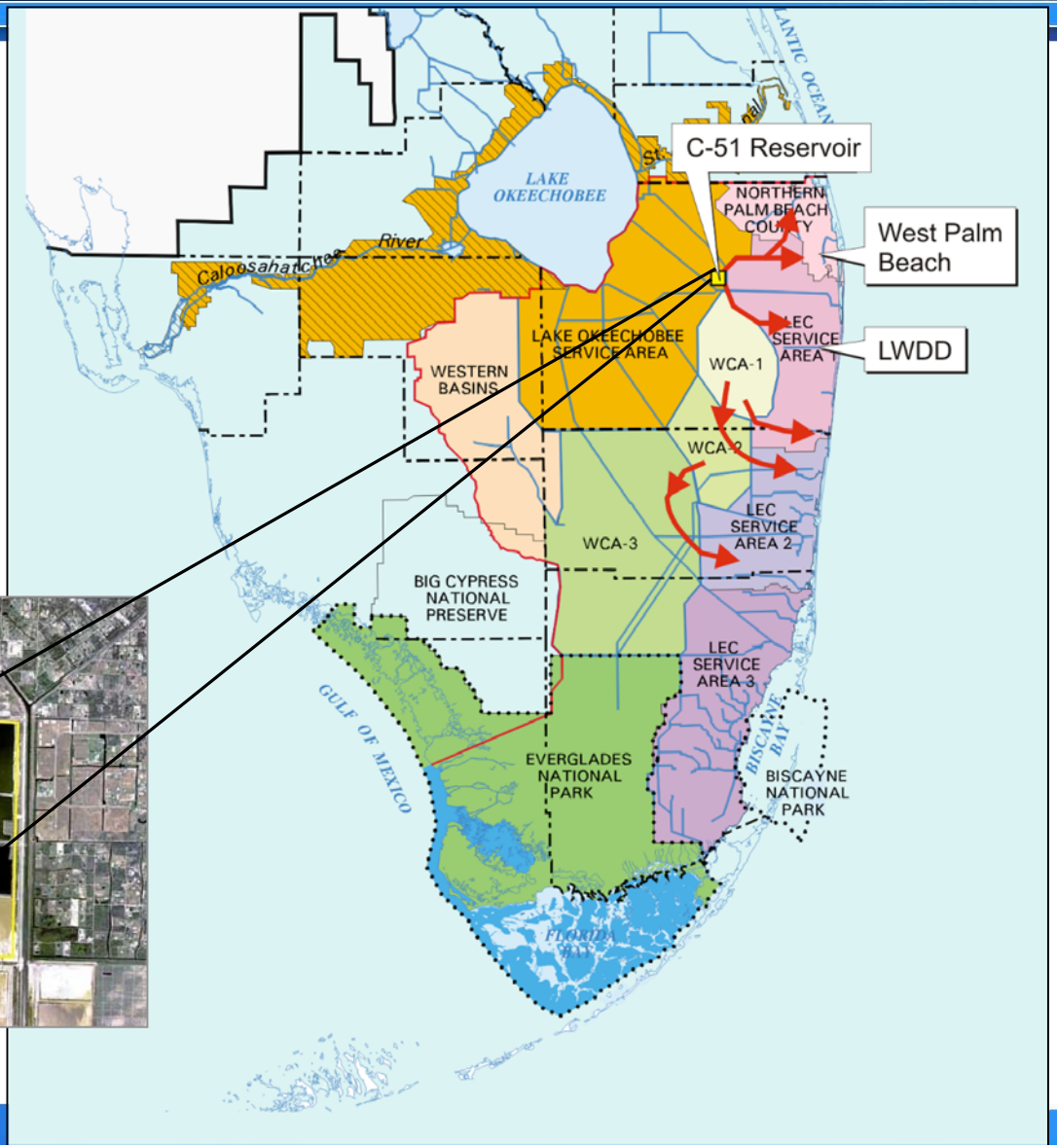
Alternative Water Supply options:

Demand Management	▪ Water Conservation ▪ Landscape irrigation with reclaimed water
New Source	▪ Captured stormwaters (C-51) ▪ Aquifer Storage and Recovery (ASR) ▪ Floridan Aquifer utilization ▪ Seawater utilization ▪ Biscayne Aquifer recharge with full treatment reclaimed water

Landscape irrigation is a demand reduction strategy



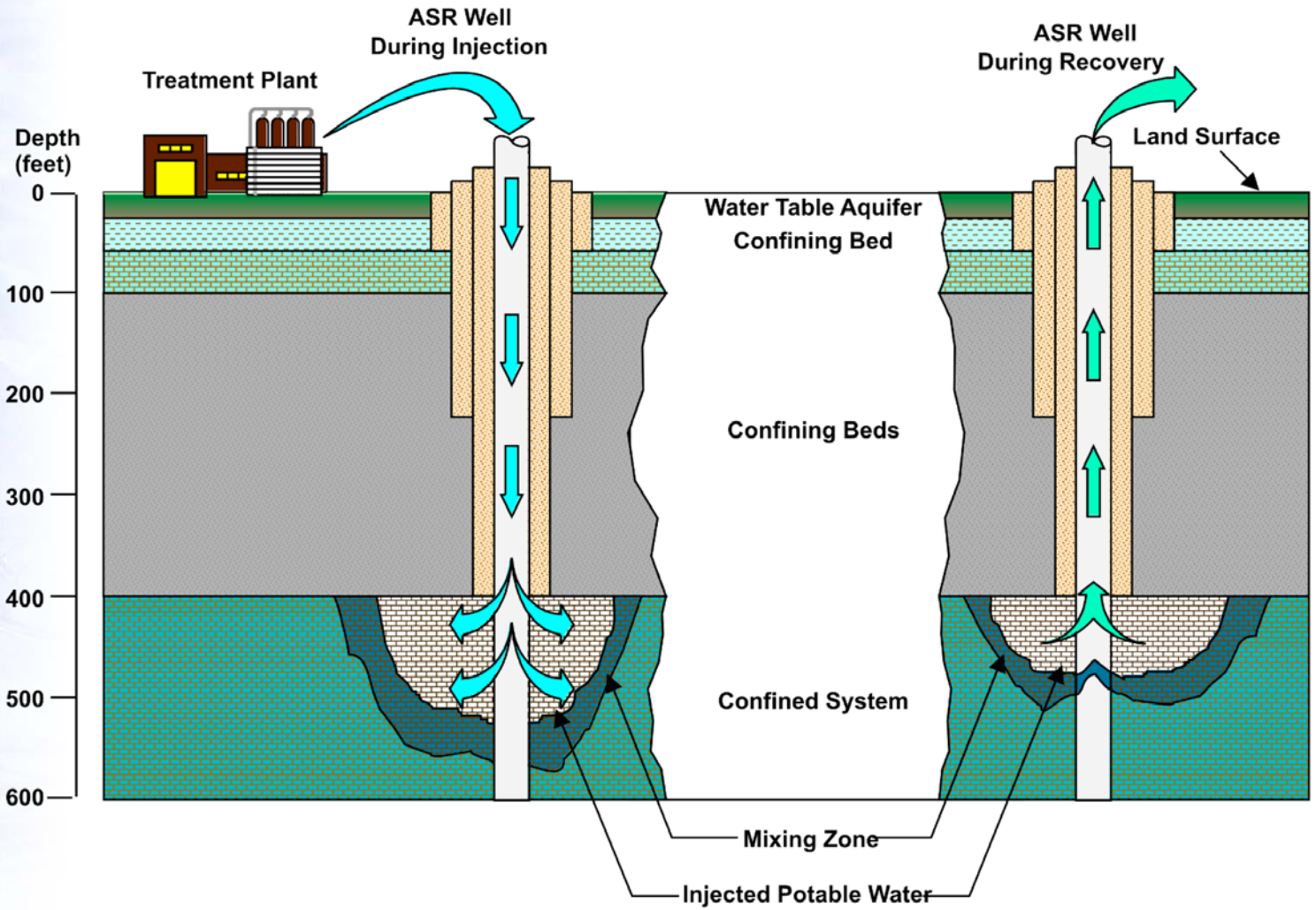
Captured stormwater



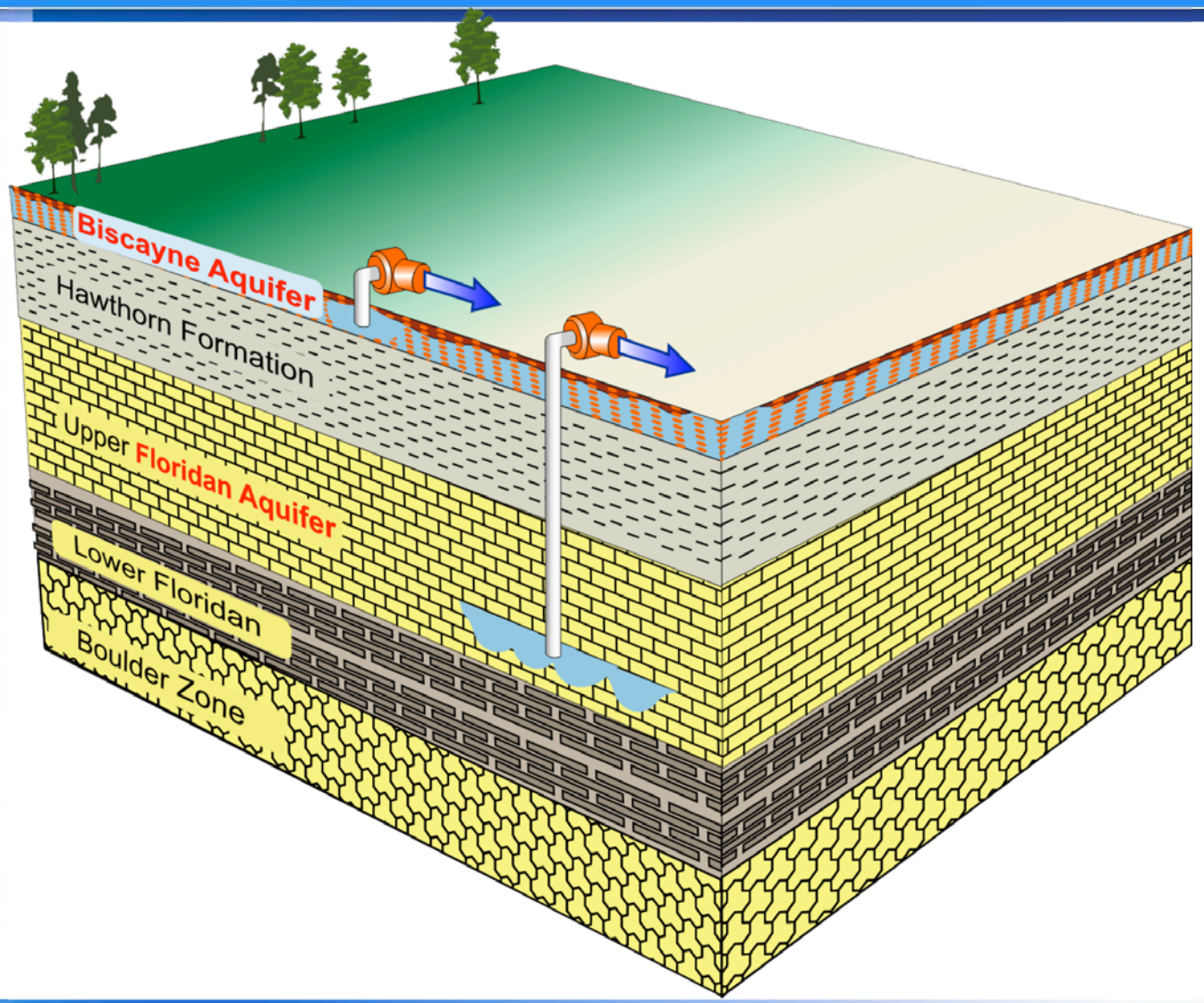
Uncertainties involving C-51 Reservoir

- Cost (private ownership)
- Institutional framework
- Permit feasibility

Aquifer Storage & Recovery (ASR) of stormwater / wet weather groundwater



The Floridan Aquifer



Uncertainties involving Floridan Aquifer

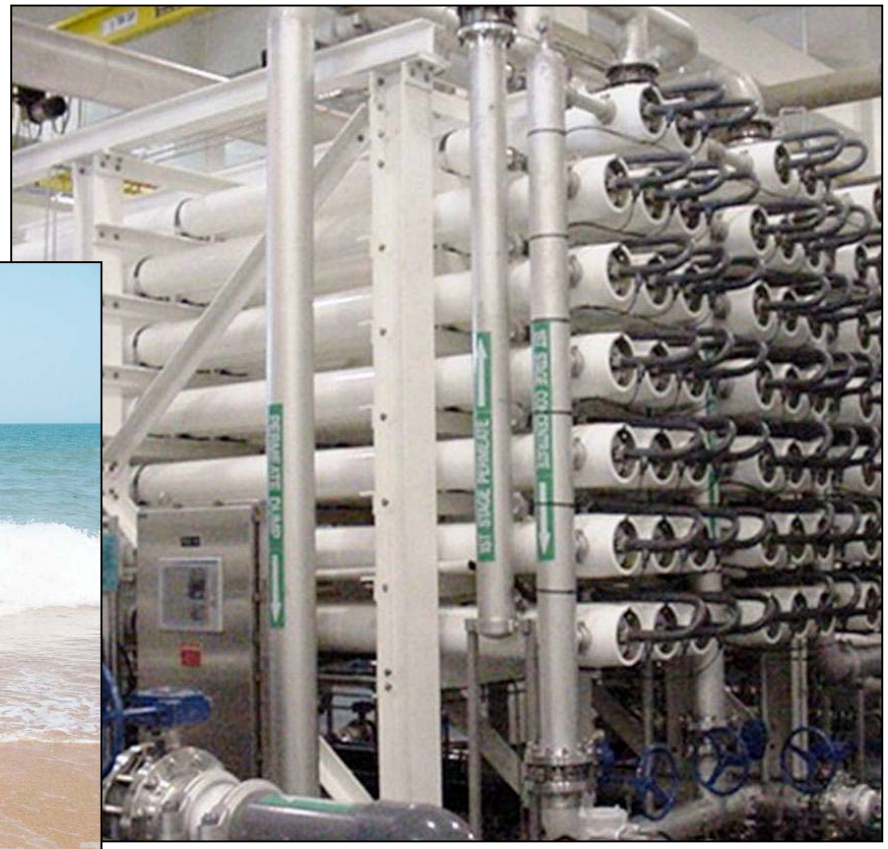
- Aquifer response with multiple users

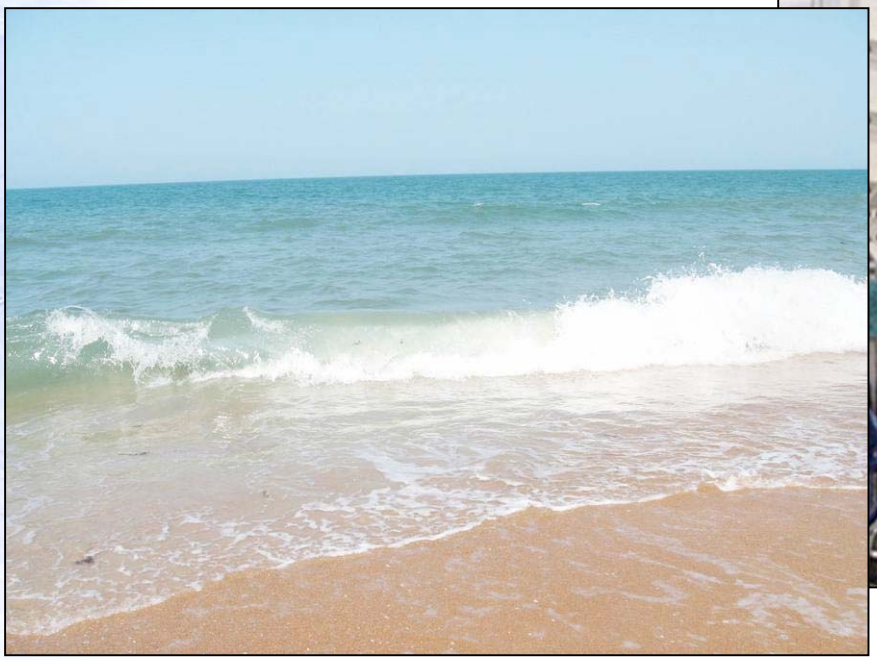
Variable Water Quality

Water Quantity

Seawater desalination

- Cost
- Treatment efficacy
- Environmental issues





Utilization of treated wastewater

Multiple levels of treatment depending upon end use

Biscayne Aquifer recharge using highly treated water

Costs are significant

AWS Option	Capital Cost Range ($/gal)	O&M ($/1000 gal)
1. Stormwater Capture (C-51 Reservoir)	3-8	1.0
2. Floridan Aquifer / R.O.	5-9	1.10
3. Seawater Desalination	10+	1.50
4. Biscayne Aquifer Recharge with Wastewater Effluent	11-17	1.50
5. Landscape Irrigation	10-14	0.50

Note: Conceptual costs based upon several utility specific assumptions.